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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0300192	FOR FURTHER ACTION	
See Form PCT/IPEA/416		
International application No. PCT/GB2004/002878	International filing date (day/month/year) 02.07.2004	Priority date (day/month/year) 09.07.2003
International Patent Classification (IPC) or national classification and IPC A61M5/145		
Applicant SMITHS GROUP PLC et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
a. <input type="checkbox"/> <i>(sent to the applicant and to the International Bureau)</i> a total of sheets, as follows:
<input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
<input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
<input checked="" type="checkbox"/> Box No. I Basis of the opinion
<input type="checkbox"/> Box No. II Priority
<input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI Certain documents cited
<input type="checkbox"/> Box No. VII Certain defects in the international application
<input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand 15.12.2004	Date of completion of this report 30.06.2005
Name and mailing address of the International preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Krassow, H Telephone No. +49 89 2399-2096



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/002878

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

Description, Pages

1-6 as originally filed

Claims, Numbers

1-8 as originally filed

Drawings, Sheets

1/5-5/5 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/002878

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-8
Inventive step (IS)	Yes: Claims	
	No: Claims	1-8
Industrial applicability (IA)	Yes: Claims	1-8
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

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Re Item V

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or
industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US-A-5 425 716 (MATSUBARA KAZUO ET AL) 20 June 1995 (1995-06-20)
D2: US-A-4 838 857 (EDWARDS FLOYD V ET AL) 13 June 1989 (1989-06-13)

1. The subject-matter of **claim 1 is not novel** (Article 33(3) PCT).

The **most relevant prior art is disclosed by D1** which describes a syringe pump including a syringe barrel size sensor mechanism (cf. Fig. 3) including a movable member (51+26) mounted for contact with the syringe barrel (21), a plurality of sensors (opto-couplers 55) and a plurality of flags (formed between the notches of blocking plate 53). The moveable member is arranged to effect relative movement between the flags and the sensors, and each sensor is responsive to a flag to provide a first (**logical "1"**) or second output (**logical "0"**) according to the position of the flag relative to the sensor. The flags and sensors are arranged such that the output of at least one sensor (the lower opto-coupler) changes from the first to the second state and then back to the first state for relative movement between the flags and the sensors in one direction (cf. col. 6, l. 9-24).

Moreover, **D2, Fig. 4**, also teaches a syringe pump with syringe barrel size sensor mechanism consisting of a plurality of sensors (82, 84, 85, 86) and a plurality of flags (91, 92, 94), wherein the output of the sensors change from a first state to a second state and back for relative movement between sensors and flags in one direction (cf. col. 5, l. 46 - col. 6, l. 24), i.e. D2 is also novelty destroying.

2. The additional features of **dependent claims 2-8 do not** appear suitable for rendering the subject-matter of any claim to which said dependent claims refer either novel (Article 33(3) PCT) or inventive (Article 33(4) PCT).

Claims 2, 3: D1 anticipates that the sensor-flag arrangement provides a 3-bit digital

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encoding signal (col. 6, l. 18-24), which means, that this provides for a maximum of 2^3 different syringe sizes in case **all** the sensors change their state from the first to the second state and back. D2 teaches the recognition of 6 different syringe sizes using also three sensors.

Claims 4, 5: A pivotable arm for contacting the syringe barrel with overcenter action is taught by D2.

Claim 6: D1 and D2 show flags which are movable with the movable member and sensors fixed to the pump housing.

Claims 7, 8: D1 teaches optical sensors (opto-couplers 55) consisting of a LED and a photodetector, and both, D1 and D2, teach an arrangement featuring three sensors and three flags.

3. The independent claim should have been cast in the **two-part form** (Rule 6.3(b) PCT) with the preamble containing those features known in combination from the closest prior art (**D1**) (Rule 6.3(b)(i) PCT) and the characterising part containing the remaining features (Rule 6.3(b)(ii) PCT).
4. **D1 and D2** should have been briefly discussed (Rule 5.1(a)(ii) PCT) in the description.